A Comparison of Adolescent Inpatients With and Without a History of Violence Perpetration

Impulsivity, PTSD, and Violence Risk

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Abstract: How childhood maltreatment and violence victimization contributes to subsequent violent behavior remains an understudied area. We examined 130 psychiatrically hospitalized adolescents and compared those with a history of perpetrating violence to those without a history of violence perpetration. Perpetrators of physical violence were significantly more likely to have been a victim and/or witness to family and community violence and also reported significantly higher levels of a broad range of psychopathology than nonperpetrators. Correlational analyses with the study group of violence perpetrators revealed that higher levels of impulsivity, dissociation, and PTSD were significantly associated with higher levels of violence. Furthermore, multiple regression analysis showed that symptoms of impulsivity and PTSD contributed significantly to the prediction of violence risk. Our findings demonstrate that violence exposure and childhood maltreatment are indeed common negative life events among adolescent inpatients, and that symptoms of PTSD may predispose traumatized youth toward impulsive violent behavior.

Key Words: Violence risk, adolescent, PTSD, impulsivity.

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Violence exposure, defined as being either the victim or witness to community, family, or school violence, is a prevalent problem among teenagers. Estimates are that as many as 60% to 70% of teenagers in the United States have witnessed serious forms of violence in their community (Bell and Jenkins, 1993; Campbell and Schwartz, 1997; Gorman-Smith and Tolan, 1998; Sheehan et al., 1997), and homicide is the second leading cause of death overall among people 15 to 24 years old (Centers for Disease Control and Prevention, 2001). As such, the issue of violence exposure and violence victimization has received considerable attention over the past decade and has become regarded as a serious health problem impacting adolescents in many of the contexts in which they are typically embedded, namely the family, school, and community.

Researchers consistently find that direct and indirect exposure to violence is associated with a broad range of psychological and behavioral problems in teenagers. Specifically, high rates of depression, anxiety, substance use, and delinquency have been found in community-based and clinical samples of adolescents (Cooley-Quille et al., 1995; Fehon et al., 2001; Freeman et al., 1993; Horowitz et al., 1995). Furthermore, adolescents exposed to violence, either as witness or victim, are presumed to be at high risk for developing their own patterns of aggressive behavior (Feigelman et al., 2000; Song et al., 1998). Along these lines, childhood physical abuse is thought to be one of the most frequent correlates of aggressive and delinquent behaviors in adolescents (Lewis, 1992).

For adolescents hospitalized in psychiatric settings, violent and aggressive behavior is a frequent reason for admission and is often a central component of treatment planning. Often, a history of childhood maltreatment or an exposure to other incidents of traumatic violence accompanies this problem. For instance, two previous studies of adolescent inpatients found that roughly half of the patients reported a history of either physical assault perpetration or victimization (Day et al., 1998; Fehon et al., 2001). Despite the prevalence of violent behavior among psychiatrically disturbed adolescents, only a few studies have attempted to examine concurrent psychological and behavioral correlates in adolescents who report violence perpetration (Day et al., 1998; Grosz et al., 1997). Fewer still have attempted to examine the association between violence exposure/violence victimization and violence perpetration. A better understanding of the psychological variables that differentiate perpetrators and nonperpetrators and an appreciation of the impact

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that exposure to traumatic violence may have in the prediction of violence risk will assist clinicians and researchers in their development of more sensitive hospital treatments for violent and traumatized adolescents.

In the present study, we attempt to examine the issue of violence exposure and violence risk among adolescent inpatients who have a history of physical violence perpetration. As such, we have four aims: (a) to determine the frequency of violence exposure and violence perpetration in a sample of adolescent inpatients, (b) to examine dimensional differences in internalizing and externalizing behaviors of inpatients who report being violence perpetrators, (c) to examine specific symptom and behavioral correlates of violence risk for hospitalized adolescents, and (d) to assess the contribution violence exposure plays in the prediction of violence risk.

METHODS

Subjects

Subjects for this study were a nearly consecutive series of 130 patients admitted to the short-term adolescent treatment unit of a private, not-for-profit, psychiatric teaching hospital in an urban setting. Patients were hospitalized at this facility because of a variety of serious psychiatric and behavioral problems, most frequently acute suicidality or dangerousness to self or others. They were admitted due to their need for inpatient-level intervention, and no other selection processes were used.

Potential subjects were excluded if they were unable to complete the self-report assessments—for example, due to severe psychiatric impairment (acute psychosis, mania, substance withdrawal) or cognitive impairment (borderline mental retardation or suspected difficulties with reading or with the English language), or if unable to complete due to rapid discharge or transfer to different facilities. The final study group of 130 patients were between the ages of 12 and 18 (M = 15.9 years). Seventy-one (55%) were female and 59 (45%) were male. One hundred (77%) were Caucasian, 17 (13%) were Hispanic, and 13 (10%) were African American.

Procedures

Each patient was administered a standard battery of self-report psychological assessments as part of their overall hospital evaluation. The assessments were computer-administered and scored and served to provide clinical data to the treatment team working with each patient. These assessments were conducted as part of an overall multimodal evaluation procedure, completed within 1 to 4 days after admission. At the time of admission, and after complete explanation of the study procedures, written informed consent was obtained from all subjects. For minors, assent was obtained from subjects and consent was obtained from their parents or guardians.

Measures

Trauma and Violence Exposure

Childhood Trauma Questionnaire

The Childhood Trauma Questionnaire (CTQ; Bernstein and Fink, 1998) is a 28-item self-report inventory designed to assess three domains of childhood abuse (sexual, physical, and emotional) and two domains of childhood neglect (physical and emotional). Items are rated on a 5-point Likert-type scale with responses ranging from "never true" to "very often true." Cutoff scores exist for each of the five categories and have been shown to have excellent sensitivity and specificity in correctly classifying cases of abuse and neglect in adolescent psychiatric patients (Bernstein et al., 1997).

Child's Exposure to Violence Checklist

The Child's Exposure to Violence Checklist (CEVC; Amaya-Jackson, 1998) is a 33-item self-report checklist adapted from *Things I Have Seen and Heard* by Richters and Martinez (1990). The checklist assesses levels of witnessing violence and other victimization in children and contains items of various types of violence that is heard about, witnessed, or experienced. Also included are items involving being a victim of physical and/or sexual assault and being a perpetrator of physical and/or sexual assault. Responses are typically coded on a 5-point Likert-type scale ranging from "never" to "more than 10 times," but for the purpose of this study, scoring criteria were modified to a scale of 0 to 2 (0 = no exposure, 1 = happened once, 2 = happened more than once). Six categories of self-reported violence exposure were identified based on patient's responses to individual CEVC items: (1) physical assault victim (PAV), (2) physical assault perpetrator (PAP), (3) sexual assault victim (SAV), (4) sexual assault perpetrator (SAP), (5) family violence witness (FVW), and (6) community violence witness (CVW).

There is little psychometric information available about this survey. Consequently, we analyzed the internal consistency and test-retest reliability of the CECV and found good internal consistency, with coefficient α values ranging from .51 to .90 for each violence category (PAV = .73, PAP = .73, SAV = .83, FVW = .51, CVW = .90). One-week test-retest reliabilities were also performed using a subgroup of 31 inpatients. κ Coefficients for agreement ranged from .47 to .85 for the different categories of violence (PAV = .78, PAP = .56, SAV = .83, SAP = .47, FVW = .78, CVW = .81; Lipschitz et al., 2001).

Child Post-Traumatic Stress Checklist

The Child Post-Traumatic Stress Checklist (Child PTSD Checklist; Amaya-Jackson et al., 2000) is a 28-item scale that asks subjects to rate the degree to which each of the 17 symptoms of PTSD was present during the past month. This scale is derived from DSM-IV (American Psychiatric Association, 1994) criteria and uses a 4-point Likert-type scale to establish symptom severity. The checklist can be

used to generate a symptom based diagnosis of PTSD based on three possible thresholds (i.e., symptoms present "some of the time," "most of the time," or "all of the time"). The PTSD Checklist yields an overall score and three composite scores reflecting the primary classes of PTSD symptoms (re-experiencing, hypervigilance, and avoidance). For the purpose of this study, patients were asked to respond to the PTSD checklist based on the most difficult or upsetting event endorsed on the CEVC. Concurrent validity of the PTSD Checklist was established by comparing diagnoses generated by the checklist to those obtained on a semistructured interview for PTSD, the Clinician Administered PTSD Scale for Children and Adolescents (CAPS-CA; Nadar et al., 1998). The mean intensity rating across the 17 items on the CAPS-CA showed a correlation of .64 with the Child PTSD Checklist (Newman and Amaya-Jackson, 1996).

Internalizing Variables

Beck Depression Inventory

The Beck Depression Inventory (BDI; Beck et al., 1960; Beck and Steer, 1987) is a well-known and widely used 21-item self-report inventory of the cognitive, affective, motivational, and somatic symptoms of depression. It has been researched extensively and has been shown to have excellent psychometric properties (Gotlib and Cane, 1989).

Adolescent Dissociative Experiences Scale

The Adolescent Dissociative Experiences Scale (A-DES; Armstrong et al., 1997) is a 30-item self-administered questionnaire that asks respondents to indicate the frequency with which certain specific dissociative or depersonalization experiences occur. The A-DES uses an 11-point Likert-type scale ranging from 0, labeled as "never," to 10, labeled as "always." The total A-DES score is equal to the mean of all item scores. The instrument has high test-retest reliability, excellent split-half reliability, and good criterion-referenced validity for an adolescent population (Armstrong et al., 1997).

Hopelessness Scale for Children

The Hopelessness Scale for Children (HSC; Kazdin et al., 1986) is a 17-item true/false scale for children and adolescents that taps negative expectations about the future. Internal consistency of .97 and test-retest reliability of .52 have been reported (Kazdin et al., 1986).

Suicide Risk Scale

The Suicide Risk Scale (SRS; Plutchik et al., 1989) is a 15-item true/false self-report measure that deals with feelings of depression and hopelessness, present suicidal feelings, past suicidal behavior, and other items that have been shown to be associated with suicide risk. The instrument has good internal reliability with a coefficient α of .74 with adolescents, as well as good sensitivity and specificity. The SRS has also been cross-validated with other inpatient samples and has been shown to discriminate between groups of patients who have made a suicide attempt in the past and those who have never made such an attempt (Plutchik and van Praag, 1989).

Externalizing Variables

Impulse Control Scale

Designed to assess impulsivity that is independent of aggressive behavior, the Impulse Control Scale (ICS; Plutchik and van Praag, 1989) is a 15-item self-report scale on which items are answered on a 3-point frequency scale. With adolescents, the ICS has good internal reliability and correlates well with other measures of suicide and violence risk.

Past Feelings and Acts of Violence Scale

The Past Feelings and Acts of Violence Scale (PFAV; Plutchik and van Praag, 1990) is a 12-item self-report scale on which responses are coded on a 3-point continuum of frequency. The scale inquires about the frequency of feelings of anger, past acts of violence toward others, use of weapons, and history of arrests. The scale has been demonstrated to have good discriminative validity with adult psychiatric inpatients, and with adolescents has been shown to have good internal consistency and item sensitivity and specificity.

RESULTS

Two groups of patients (physical violence perpetrators and nonperpetrators) were identified based on responses to individual critical items of the CEVC. As a validity check, the CEVC violence perpetrators scored significantly higher on the PFAV than nonperpetrators (CECV perpetrators = 12.48 vs. CECV nonperpetrators = 5.19; $F = 78.72$; $p < 0.000$). There were no significant differences between the two groups with respect to age, gender, or ethnicity.

Table 1 compares self-reported histories of violence exposure for the two study groups. Perpetrators of physical violence were significantly more likely than nonperpetrators to report being a victim of physical violence and a witness of family and community violence. Perpetrators and nonperpetrators did not differ in their history of being either the victim or perpetrator of sexual abuse.

Table 2 compares the mean scores of each psychological measure for inpatients that reported being perpetrators of physical violence and for those who denied violence perpetration. Perpetrators of physical violence reported more instances of childhood maltreatment referable to emotional abuse, physical neglect, and physical abuse. Perpetrators of physical violence also reported significantly higher levels of

TABLE 1. Comparison of Study Groups With Respect to Violence Perpetration and Victimization

	Violence perpetrator ($N = 52$)	Nonperpetrator ($N = 78$)		
	$N\%$	$N\%$	X^{2a} ($df = 1$)	φ^{A}
Sexual assault perpetrator	5 (9.6)	3 (3.8)	0.94	.12
Physical assault victim	43 (82.7)	33 (42.3)	19.32*	.40*
Sexual assault victim	22 (42.3)	24 (30.8)	1.35	.12
Family violence witness	37 (71.2)	31 (39.7)	11.11*	.31*
Community violence witness	42 (80.8)	32 (43.2)	18.51*	.39*

*$p < 0.001$; all tests are two-tailed.
[a]χ^2 with the Yates continuity correction.

TABLE 2. Scores on Psychological Measures for Inpatient Adolescents Who Reported Being Perpetrators of Violence and for Those Who Denied Violence Perpetration

	Violence perpetrator ($N = 52$)	Nonperpetrator ($N = 78$)	
	M (*SD*)	M (*SD*)	F ($df = 1,129$)
Externalizing variables			
Violence potential	12.48 (6.10)	5.19 (3.22)	78.72**
Impulsivity	19.92 (6.39)	15.72 (5.32)	16.60**
Internalizing variables			
Depression	22.46 (14.83)	13.19 (10.56)	17.32**
Hopelessness	7.52 (4.76)	4.87 (3.46)	13.47**
Suicide Risk	7.19 (3.79)	5.46 (3.38)	7.42*
Trauma-related variables			
Childhood trauma (total)	49.04 (15.98)	39.53 (11.72)	15.31**
Emotional abuse	13.37 (5.59)	10.55 (5.07)	8.57*
Emotional neglect	8.25 (2.50)	8.41 (3.01)	0.10
Physical abuse	10.44 (5.67)	6.65 (3.12)	24.02**
Physical neglect	8.79 (3.15)	7.06 (2.21)	13.44**
Sexual abuse	8.19 (5.76)	6.85 (4.22)	2.36
Dissociation	3.10 (2.07)	1.96 (1.89)	10.42*
PTSD (total)	32.21 (20.45)	19.01 (16.06)	16.90**
Avoidance	11.69 (7.16)	7.37 (6.40)	12.92**
Hypervigilance	9.38 (5.78)	5.09 (4.84)	21.00**
Re-experiencing	7.90 (6.61)	4.82 (5.40)	8.48*

*$p < 0.01$; **$p < 0.001$.

depression, hopelessness, suicide risk, impulsivity, dissociation, and PTSD symptomatology than nonperpetrators.

Table 3 shows the association between violence potential and each psychological measure for the inpatients who reported being perpetrators of physical violence. Correlational analyses revealed that higher levels of impulsivity, dissociation, and PTSD were significantly associated with higher levels of violence.

Finally, a multiple regression analysis was performed to ascertain the independent and joint contributions that a

TABLE 3. Associations of Psychological Measures With Past Feelings and Acts of Violence for Adolescent Inpatients Who Reported Being Perpetrators of Violence

	Violence perpetrators ($N = 52$) r
Externalizing variables	
Impulse Control Scale	.54***
Internalizing variables	
Beck Depression Inventory	.27
Hopelessness Scale for Children	.17
Suicide Risk Scale	.21
Trauma-related variables	
Childhood Trauma Questionnaire	.04
Emotional abuse	.02
Emotional neglect	.13
Physical abuse	.03
Physical neglect	.23
Sexual abuse	.05
Dissociative Experiences Scale	.38**
PTSD Checklist	.36**
Avoidance	.31*
Hypervigilance	.42**
Re-experiencing	.27

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

history of violence exposure and selected psychological measures make toward the prediction of violence risk among the 52 patients who reported a history of physical assault perpetration. Seven predictor variables (age, gender, impulsivity, depression, dissociation, PTSD, and childhood trauma) were included in an overall regression analysis to predict level of violence risk (PFAV). The seven variables jointly accounted for 43% of the variance ($F[7, 51] = 4.64$; $p < 0.001$); impulsivity and PTSD made significant independent contributions.

DISCUSSION

The study of violence risk among psychiatrically disturbed adolescents is an important area of research given the prevalence of violent behavior among this population and its relevance to treatment planning. Studies of this type help clinicians and researchers identify factors that contribute to the prediction of violence risk among acutely disturbed adolescents and target areas for effective intervention. This particular study yields three main findings worthy of specific review.

First, the results of this study indicate that psychiatrically hospitalized adolescents with a history of violence perpetration report experiencing more episodes of violence exposure and childhood maltreatment compared with the adolescents without a history of violence perpetration. Specifically, the inpatients with violence histories reported being the witness of violence in their homes and communities, in addition to being the direct victim of childhood physical abuse, physical neglect, and emotional abuse. Therefore, the adolescents who had engaged in previously violent behavior had greater exposure to negative events that involved violence, aggression, and the abuse of others. This differential pattern of violence victimization and violence exposure supports a social learning theory hypothesis and intergenerational transmission hypothesis (Widom 1989, 1994), which postulates that an aversive interactional style and violent behavior is in part learned though one's direct and indirect exposure to the violent behavior of others. This finding also suggests that the experience of violence victimization during one's childhood may contribute to development of psychopathology that is dynamically unique in its predisposing of violent tendencies.

Importantly, perpetrators and nonperpetrators did not differ in their history of being either a victim or perpetrator of sexual abuse. A priority for future research efforts would therefore be to understand better the differential impact that various forms of childhood trauma may play in the development of problem behaviors such as violence and aggression.

Second, as a group, the inpatients who reported a history of perpetrating physical violence also reported a broad range of internalizing and externalizing symptoms that was characterized by higher levels of depression, hopelessness, suicidality, impulsivity, dissociation, and PTSD than the nonviolent inpatients. However, despite their report of greater overall symptom severity, only higher levels of impulsivity, dissociation, and PTSD were correlated with violence risk among the inpatients who reported violence perpetration. Interestingly, only two of the three PTSD symptoms were related to violence risk. Level of PTSD re-experiencing was unrelated to level of violence risk, while avoidance and hypervigilance were related. This finding suggests that an identification of PTSD subtypes may be useful in that individuals with high levels of certain PTSD symptoms may be at higher risk for certain behaviors such as aggression, self-injury, or substance use. Similarly, for some individuals, violent behavior may also serve as an externalized form of behavioral re-experiencing and a physical re-enactment of past trauma.

Our positive dissociation finding is also of interest, especially when examined in light of significant PTSD hypervigilance—a seemingly opposite psychological process. One explanation for this finding is that hypervigilant patients may be exquisitely sensitive to certain aspects of their environment, but by overattending to certain cues and not others, they might overlook the larger context related to their surroundings. In this sense, perhaps hypervigilant patients dis-

sociate in a way from their experience so that they can maintain an active vigilance on personally relevant and potentially emotionally provocative or threat-inducing stimuli.

Further examination of the data yielded the third main finding of this report—namely that symptoms of impulsivity and PTSD were in fact found to be significant independent predictors of overall violence risk. While a history of childhood trauma and maltreatment may be commonly seen in the lives of adolescents treated in psychiatric hospital settings, it appears that the presence of PTSD symptomatology and the trait of impulsivity in particular play a more important role in the overall prediction of violent behavior. As such, the psychiatric sequelae of childhood trauma, namely the development of PTSD and its characteristic features of emotional and behavioral dysregulation, hyperreactivity, and sensitivity, may predispose traumatized youth toward impulsive behaviors such as violence and aggression. Nonetheless, clearly not all traumatized youth develop symptoms of PTSD. In our sample, approximately 42% of patients who were physical assault victims and 40% of patients were victims of family violence did not become perpetrators of violence. We recommend that future studies examine protective factors among traumatized youth that may help break the victim-to-perpetrator cycle of violence.

Taken as a whole, our findings suggest that symptoms of distorted affective arousal and behavioral dysregulation play an important role in assessment and prediction of violent behavior. These findings support the work of earlier researchers (Bowlby, 1980; Bugental, 1993) who suggested that childhood maltreatment predisposes individuals to approach situations with a heightened tendency to process threat even where the actual threat of harm is low. More recent research examining structural and functional brain activity using MRI and PET technology point toward dysfunction of the hippocampus in patients with PTSD (Bremner et al., 2003). The hippocampus is a brain region believed to be involved in mediating emotional processing of complex visual stimuli and the integration of different aspects of memory, as well as the ability to locate a memory in time, place, and context. Prolonged periods of stress have been shown to correlate with elevated cortisol levels in the brain, which can damage the hippocampus in humans (Sapolsky, 1996), thus lessening one's ability to process and respond to incoming information accurately.

Several strengths and limitations of this study are also worth noting. Our selection process resulted in a heterogeneous study group of psychiatrically hospitalized adolescents. The study group was nearly consecutive in nature, with primarily gross psychotic or cognitively impaired patients resulting in exclusion. Thus, our sample is perhaps generalizable to other general adolescent inpatient facilities. Our two study groups (violence perpetrators and nonperpetrators) were ascertained from the same overall sample and did not differ in important demographic features (i.e., age, gender, and ethnicity). Nonetheless, our findings may be potentially limited by our reliance on patient self-report. Although the validity of self-reports in adolescents must be considered cautiously, we also note that previous literature (Winegar and Lipschitz, 1999) has shown that psychiatrically hospitalized adolescents' self-reports of maltreatment experiences concur well with best estimate sources consisting of data from police reports, medical records, child protective services, and clinician reports. Also, a number of potential biases range from negative mood states to more interpersonal biases stemming from individual response styles. Conversely, it is arguable that computer-administered self-report questionnaires may make disclosure of sensitive or embarrassing material easier for adolescents. Many of the instruments here have undergone previous psychometric and validity checks against other assessment methods, and computer administration methods have previously been empirically found to be useful for assessing sensitive topics such as depression and suicidality (Erdman et al., 1987; Fowler, 1985).

Finally, our reliance on self-report data as the sole means of data and clinical material limits the scope and understanding of our subjects; therefore, future studies would benefit from including additional sources of patient data such as structured diagnostic interviews, life event assessments, family history data, and psychophysiologic laboratory data.

In conclusion, our findings demonstrate that violence exposure and childhood maltreatment are common phenomena among adolescent inpatients who have committed previous violent acts. These negative life events appear to play an important role in the development of PTSD and the disorder's characteristic features of emotional and behavioral dysregulation, hyperreactivity, and sensitivity, thus predisposing traumatized youth toward impulsive behaviors such as violence and aggression. Hospital-based treatment programs should therefore thoroughly assess for the presence of PTSD symptoms in inpatients with a history of violence exposure and violence perpetration to aid in their effective treatment planning. Adolescents who exhibit these symptoms are apt to lack the prerequisite affect regulation skills to modulate aggressive and self-destructive impulses and will require integrated psychopharmacologic and behavioral strategies to improve affect regulation and behavioral control.

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